

The Role and Significance of Forest on Climate Change and Economy in Pakistan

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ABSTRACT

Forests refer to the area of the earth where trees are abundant. Realizing the economic and environmental importance of forests makes their presence valuable. At present, forests are very important for human and animal life, but still, deforestation continues without any thought, which is dangerous for the human environment. The Forests of a country mostly depend on a suitable climate and temperature along with a good ratio of the amount of rainfall. With all this, the type and condition of soil it possesses for growth. In Pakistan, various types of forests are found in different areas. This is an analytical-based study about the role of forests in the economy. Among the various traditional sources of income, forests are also considered a very important source of earning from the prehistoric period of mankind. Man used wood for fire to cook food and its wooden articles for earning. In the modern era of development, forests are considered a sign of prosperity for a country and play a very important role in the atmospheric and climatic change of society on a global level. Although Pakistan is recognized as an agrarian country and agriculture is the major tool of the economy, Pakistan needs more forest, which has always proved seriously fatal for the environment of the country. Primarily this paper deals with and explores the role of forests in the economy of Pakistan after its emergence. The following paper deals with and explores the nature, importance and role of forests in the atmospheric condition and economy of Pakistan.

Keywords: Forest; Mankind; History; Economy; Agriculture; Pakistan; Development etc

1. Introduction:

Forests are considered the most important natural source. Pakistan is among the developing country of Southern Asia. Its economy is based on agricultural-related ingredients. With agriculture, some other important sources of the economy also play an important role in improving the economy and life of the people. Among these sources' forests, livestock, and fisheries are very important in the national income and improvement of the economy. However, more than forests are needed in Pakistan; Livestock and fisheries are very much enough to boost the economy of the country. In Pakistan, forests were cut down or burned to make way for cultivation and animals. The forest-covered areas have been considerably reduced. At the time of the establishment of Pakistan, about 50 lac acres of the area were covered with natural or artificial forests. It was about 2.6 percent of the total area, which was insufficient for the country's needs because, according to experts, the area under forests in a country should be at least 20 to 25% percent for a well-balanced economy. In Pakistan, only 4.8% of the total area is under forests. But due to the afforestation programmers of the

government, the acreage under forests has increased considerably up to March 1995; the total areas under the control of the Forest Department were 6.9 million hectares, out of which 3.8 million hectares are rangelands and the remaining 3.1 million hectares is a wooded area.

The Government has taken various steps to increase the areas under forests; large areas have been reserved for afforestation in Thal, Ghulam Muhammad Barrage, and Guddu-Barrage, which is likely to improve the future acreage of forests. Besides, this forest department celebrates weeks for the plantation in the months of spring and rainy seasons. During these weeks, people are encouraged to plant more and more trees. (Anwar, 1999).

1.1. Objectives:

- To study comparative efficacy of leaves, Bark and Fruits of *Terminalia arjuna* against gram negative and positive bacteria.
- To explore the comparative efficacy of leaves, Bark and Fruits of *Terminalia arjuna* against fungi.

2. Economic Values of Forests:

As all the countries of the world are working on the issue of climate change, and for this purpose, Forests have played an important role in the improvement of the economy of the country. The expert opinion is to grow trees in 25 percent area. Since the emergence of Pakistan, the country has not had enough economic sources to improve and uplift its socioeconomic condition. Forests were also considered a tool of development. The Government controlled forests produced 143 thousand cubic meters of timber and 400 thousand cubic meters of firewood during 1994-95, and it is estimated that 198 thousand cubic meters of timber and 510 thousand cubic meters of firewood will be produced during 1995-96, while the estimated annual demand of timber and firewood is 1.96 and 16.4 million cubic meters respectively. The gap is being met through timber and firewood obtained from private lands and imports. The following measures are being taken to increase the wooded areas in the country and narrow the gap between the supply and demand of forest products; Forests have a profound effect on the Pakistani economy. Being an agricultural country, forests contribute to the country's income (Anwar, 1999). Forests have numerous benefits, including helping to moderate temperatures, preventing soil erosion in floods, and providing shade, shelter for wildlife and fodder for animals. They also help in providing fruits.

Climate Change

Incessant rain turned into nightmare due to the pooling of water, while faulty infrastructure also compounded the gravity of the disaster. The aforementioned countries' experiences suggested that ill-planned infrastructure, particularly in the irrigation and highways sectors, and the unregulated sprawl of human settlements, have multiplied the lethal impact of disasters. Pakistan experienced this in the earthquake of 2005 and the floods of 2010 and 2011. The rapid assessment of the disaster caused by the cyclone Yemyin in 2007 in Balochistan and Sindh identified the Mirani dam barrier, inadequate cross drainage works and unbridled settlements obstructing natural waterways as major causes of havoc caused by reverse flow. In 2010, encroachments in river plains were identified as a major contributing factor that exacerbated the effects of the floods. This year, the LBOD again dictated the lessons of the cyclone of 1999 and the rain floods of 2003: on all three occasions, the LBOD was identified as a major barrier in the flow of rainwater to the Rann of Katch.

The climate change rollercoaster suggests that the entire infrastructure and administrative web may need to be supplanted in the wake of the new manifestations. Prominent climate change campaigner Al Gore, said: "The rules of risk assessment are being rewritten right before our eyes. This year alone, in the United States we have had \$10bn-plus disasters." What Al Gore said with reference to the US is true for much of the world now. Pakistan's irrigation and drainage networks are also victim to the inadequacy to manage abnormal flows. The LBOD drain, for example, has a design discharge of 4,000 cusecs but this year it had to bear 18,000 cusecs.

This caused a number of breaches in the drain and reverse flows in the hundreds of kilometers-long connecting network of drains. Similarly, the administrative web was vitiated by the intensity of the disaster which required several million souls to be evacuated within days and settled in camps.

The provincial and district level disaster management authorities are neither sufficiently equipped to nor skilled in managing such a scale of operations. Pakistan has recently moved up from 29th in 2009-10 to number 16 on the Climate Change Vulnerability Index. The frequency of intense weather events warrants dexterous overhauling of the infrastructural and administrative set-up. The coming years may prove even more excruciating for communities in Pakistan and elsewhere in Asia. Pakistan is located in this zone too, it is also bearing the brunt of the climate change phenomenon. Last year, the country witnessed an unusual shift of the monsoon from the easterly to the westerly region. This year, the lower half of Sindh received record-breaking rains. Rainfall in lower Sindh averages between 200 to 250mm, which normally occurs from July to August. This year it came in September and the districts of Mirpurkhas, Badin and Shaheed Benazirabad received 810, 680 and 640mm of rain respectively - way beyond the normal averages. Badin received 297mm of rain just in two days, on Aug 11 and 12, which buffeted hundreds of villages along main artery of the Left Bank Outfall Drain (LBOD). The overall damages surpassed last year's figures. Due to Sindh's flat topography, the province has only 200mm fall for lithely (Dawn-October)

2.1. Importance and Uses of Forests:

"According to an agricultural forest expert, "A country can live without gold and silver, but not without forests. The following are the importance of forests for us:

- ✓ As there is a shortage of power resources, the coal and oil found in amount is insufficient to meet requirements, so a large population of our country living in rural areas uses wood for fuel and other domestic purposes.
- ✓ Besides timber wood being used as fuel, the wood for making furniture and building material is also obtained from forests. ü Forests supply the raw material and wood for various industries of the Country, such as matches, paper, sports goods, rosins, rayon, etc.
- ✓ Forests keep the climate of the adjacent areas pleasant by getting it through their branches and the moisture through its roots from the interior of the Earth and spreading.
- ✓ The forest areas of our Country serve as pasture for the cattle of farmers living near them; camels, sheep and goats get their food from them.
- ✓ In mountainous areas, forests help to preserve our agricultural land banks of canals and rivers from erosion. From the dangers of erosion. In plain areas, forests or trees save the
- ✓ The most important thing is that the forests provide oxygen gas for us and consume our filthy carbon dioxides.
- ✓ A large number of fruits that we use are provided from trees or forests.
- ✓ In forests, many animals take refuge, so forests provide hunting facilities for hunters, and they get meat and skins from them.

2.2. Kinds of Forests in Pakistan:

The main natural forest of our country is in the northern areas, including Mtats hand Division of NWFP (having the areas of the ex-states of Chitral and Sawat. As these areas are higher enough from sea level and, have a sufficient amount of rainfall, and are well distributed, so a large number of evergreen coniferous trees, such as the deodar, Kail, spruce, are seen here/Generally, the forests bolt lies between the height of 3000 to 12000 feet above sea level. The wood of these wees too soft but valuable for building and construction work. The sheedar is a particularly valuable source of timber, and it can be used for making domestic articles and several other purposes.

2.2.1. Forest of Foothills and Plains:

In the areas below the height of 3000 feet from sea level, the main trees fruits are deciduous bread-leaved like the oak, chestnut and walnut etc. Besides these, Pepoal, Kao, chinar, mulberry, wild olive, apples, and other traps are found in lower areas. Their wood is used for making furniture and as fuel.

2.2.2. Baluchistan Forests:

Due to poor rainfall, dense forests are not found in Quetta and Kalat divisions. The main trees of these areas are Pictudos, Chalghoza, pines pencil, Juripens, and chestnuts.

2.2.3. Tidal Forests:

These forests extend from Karachi to Kutch, covering an area of about 750,000 acres. The coastal was to lands grew presses and a mangrove type of vegetation flooded by high tides twice a day. A large amount of firewood is obtained. Some valuable species are being experimented upon in these areas.

2.2.4. Riverain/ Bela Forests:

Such forests are found along the banks of big rivers, especially the lower Indus plain; the main varieties include Shisham and Babul trees. The Shisham wood is mostly used wood as fuel and for furniture, and the bark of babul is used for tanning purposes.

2.2.5. Artificial Forests:

In some areas of Punjab and Sindh, a few intimated plantation units have been established where hardwood species, such as Shisham, mulberry, and/acacia troops /Otto, are grown for commercial purposes; Changa Manga forest situated about 40 miles from Lahore is the largest of the irrigated forest plantation. Besides this, artificial forests are being maintained at Chichawatni, Kotla Adeeb Shahid Sahiwal, Khanewal and in some parts of Ghulam Muhammad and Guddu Barrages (Sindh).

2.2.6. Rakhs:

There are dry shrub forests found in isolated patches far away from urban centers all over the arid plans of Pakistan. The main species in these forests are Jand, Karil, Farash and Bakain. The wood of these trees is mostly used for fuel purposes.

2.3. Grass Lands:

Most of the areas of our country have less than 10 inches of rainfall, which is insufficient for the growth of forests; before the introduction of canal irrigation, most of the areas in Punjab consisted of grasslands. But under the grow more food schemes, most of the grasslands have been brought under cultivation, only at a few patches of land-poor quantity of grass exists where cultivation cannot be carried on for want of water, but some poor grass in patches, large or small, is to be found in the hilly areas of the Pothohar plateau and the mountainous slopes of Baluchistan and KPK Provinces.

2.4. Desert and Semi Desert Vegetation:

Our country also has a few desert areas. Thal and Cholistan in Punjab and Nara and Tharparkar in Sindh and Baluchistan have arid and semi-arid climatic conditions here due to acute shortage of rainfall or water; only poor grass, shrub or stunted bushes can be seen. In most areas, no vegetation exists; only dunes are found there. Forests in Pakistan constitute 4.8 percent of the total land. The contribution of forestry to GDP was recorded at 0.21 percent in 1998-99. During the current year, forest nurseries over 550 hectares were

raised in the private sector. In addition, 181 million saplings were distributed to planting in the public and private sectors. Under the social were established in rained areas. (Forestry Program, Kissan Nurseries yielding @1 million saplings).

3. Deforestation in Pakistan:

Likewise, the loss of forests has severe consequences if forest experts say that the role of forests in removing carbon dioxide from the atmosphere is disappearing. There are very negative effects. The organization has also compiled a research report. According to the report, if the temperature rises above a certain limit of 2.5 degrees Celsius, the carbon dioxide gas release rate into the atmosphere by forest trees will increase significantly. Professor Rasto Sapala from Finnish Forest Research, a forestry research institute, says, 'We see forests as a tool to end global warming. However, due to the increase in temperature during the last few decades, many forests are releasing large amounts of carbon dioxide into the atmosphere, creating a situation where forests are causing global warming instead of reducing it. However, it is worth noting that the reduction of forests due to human activities is responsible for 20% of the emission of toxic gases, but the rate of emission of carbon dioxide gas by forests is lower than the rate of absorption of this gas. According to experts in Pakistan, illegal deforestation has been on the rise in the last few years, so the total area of forests is decreasing rapidly across the country. Pakistan is now ranked second among the countries where forests are rapidly disappearing. According to the Pakistan Forest Institute, a government teaching institution that researches forests in Pakistan, the country had 3.59 million hectares of forests in the 90s decreased to 3.32 million hectares in the 2000s. According to the organization, in 2002, the area of forests increased to 4.5 million hectares; five-tenths of forests cover five-tenths of one percent of the country's area. According to him, the area of forests in Pakistan has been decreasing continuously every year for the past decade, under which this area has reduced to three percent of the total area.

Pakistan's forest resources are shrinking at the rate the people of Pakistan and on the ecological system, 1% per annum and this will have dreadful effects on Deforestation. While Deforestation's dreadful effects on our environment. Once an area is cleared of vegetation, regenerating it requires a lot of effort and money. The following measures could help solve the problems caused by Deforestation. Supplying irrigation facilities to the deforested areas with effective enforcement of regeneration programs. Commercial species of trees. Which grow rapidly and should be planted. Creating awareness among the people by the government agencies, Non-Governmental Organizations (NGOs) and community workers about the hazards of Deforestation. The natural gas supply to northern areas will make life easier for the population and will eventually help ease the pressure on the environment. Rapid Deforestation has forced local people, especially women, to trudge ever-greater distances on foot to forage for firewood, which they have to carry home in heavy bundles. The local availability of natural gas should end this ordeal for them. By improving the techniques of raising nurseries and planting trees, deforested areas could be regenerated quickly. Forest management should try to find ways to make forestry more sustainable- Experts emphasize planting more trees and plants to prevent environmental pollution while we are busy cutting more and more. Pakistan is one of the countries where "environmental pollution" has become very dangerous. The main cause of environmental pollution in us is the "indiscriminate" cutting of trees. According to a survey in 2011, there were forests in 5.1% of the total area in Pakistan, but unfortunately, Pakistan is losing 42 thousand hectares of forests annually. According to the Food and Agriculture Organization of the United Nations, forests in Pakistan cover an area of 1.617 million hectares, only 2.2% of the country's total area. Pakistan is number 113 on the list of 143 countries with decreased forest cover worldwide. Ensuring that logging companies only use selective cutting methods. Restricting the use of bulldozers and heavy destructive machinery in forests.

✓ Strict enforcement of forest laws.

✓ Enforcement of village/farm forestry programmers

3.1. Causes of Deforestation:

1. Large Forest tracts are cleared to grow crops and conduct mining activities. After the construction of dams and barrages which provide irrigation water, millions of hectares of land were cleared to meet the food requirement of the growing population, i.e., Fuel wood.
2. Increasing urbanization also causes deforestation. The sprawling growth of cities has converted forest areas into residential colonies.
3. Due to industrialization and urbanization, there is great demand for better transport facilities.
4. In Pakistan, road transport is preferred over other means. The road transport network is getting larger and denser. In many make roads. Areas lines through forests have been cut.
5. Pakistan has a good domestic and foreign market for wood-based products. Wood is used in industries like sports goods, chipboard, and the building of roads. Overgrazing of Mining Wood is also required as construction material hardboard, veneer, plywood, and safety matches for the building. Bus bodies, boats and railway coaches also consume wood. As a result, forests are cut down to meet industry demands.
6. In Pakistan, nearly 50% of heating and cooking requirements are met by 20.88 cubic meters of fuel wood annually. 76% of the rural population depends on wood for heating and cooking, resulting in excessive tree-cutting.
7. Overgrazing of land by cattle, goats and sheep has also converted sub-tropical scrub forest and tropical thorn forest areas into deserts.

3.2 Effects of Deforestation:

Reckless cutting of trees for firewood or other commercial purposes can result in deforestation. The effects of this are extremely harmful and can result in the degeneration and destruction of our environment and loss of food and resources. Deforestation affects the ecological system in many different ways. Deforestation exposes the soil to the forces of wind and water, especially on the foothills of the mountains. Soil erosion is a menace. The upper layer of the soil is eroded and leaves behind Infertile coarse sand. With heavy rainfall, the water gushes down the mountains carrying large quantities of silt and sand; with no trees to hold the soil together and slow the water flow, the surface run-off may cause heavy floods. Large amounts of silt from the Northern Mountains also come down, and they accumulate in the reservoirs of the dams. This reduces the capacity of the reservoir and disrupts the generation of hydroelectricity Deposition of silt also harms fisheries and blocks irrigation canals. Continuous disruption of water badly affects the crops, reducing food production. Deforestation in Swat Mingora: The people visiting Swat, especially those from Karachi, have expressed concern over the destruction of the forests of Swat on a very large scale and expressed apprehension that it would affect the tourism industry in the district as well as in the district of Shangla. Talking to a correspondent, the tourists said they had been visiting Swat regularly during summer on pleasure trips, and every time, they found depletion of the forests of two districts. They were of the view that the administration had failed to protect the forest's wealth in the absence of effective protection measures. They felt that the government should make arrangements to protect the forests, without which Swat would lose its natural beauty, and tourists would have no attraction left. It would also adversely affect the economy of the people of the massive land erosion" (Daily Dawn, 1997). The climate changes result in less rainfall which may lead to lower crop yields in Pakistan; Forest resources are already meagre and under constant stress due to reckless and unauthorized cutting of trees. Political pressures and administrative mismanagement intensify the

crisis. There is a strong need to stop the process of deforestation and to manage the forest resources on a scientific basis by implementing afforestation/reforestation programs.

According to the forest record, the total area of the land was 48564 acres. This area was divided into 24 Rakhs, and these Rakhs were under the forest department. While other 466455 acres were divided into 62 Rakhs. And these Rakhs were under the control of the deputy commissioner (Census Report, 1961). Forests play a vital role in the economic development of the country; therefore, the government has made a lot of effort to increase the forest. Like other districts in Muzaffargarh, the forest development has seen especially reserved areas of Thal with the banks of rivers, canals, schools, colleges, and offices. Besides, this forest department celebrates the week for tree plantation in the month of spring and rainy seasons; during these weeks' people are encouraged to plant more and more trees. According to the report of the divisional forest officer in 1970, the annual income of the forest was less than one lac which improved now. Similarly, due to increasing temperature, this balance can be disturbed. That is, if the Earth's temperature increases by another 2.5 degrees Celsius, the balance of carbon dioxide emission and absorption of forests will be disturbed. According to the report, drought temperature extremes, insect attacks on forests and other environmental changes as given below (District Gazetteer, 1929).

Rakh under Forest Department	24
Rakh under Dy. Commissioner	62
Total Rakhs	86
Area under Forest Department	4856
Area under Dy. Commissioner	466445
Total Area	471301

In Dera Ghazi Khan Division District, Muzaffargarh Forest division was created in 1945. All the forest area falls in Kotadu Alipur, Jatoi Layyah and Muzaffargarh. Most of the forests are scattered on the left bank of the River Indus and the right bank of River Chenab or at the confluence of both rivers. Five irrigated plantations, namely Sarian, Belawala, Mudwalw, Ranuja and Dandewalw, consist of an area of 5236 acres and Chak No. 116/ ML, 515/TDA, 519/TDA and 529/TDA area of 190 acres of Layyah. The total area of the Muzaffargarh and Layyah Forest division was 1158044. The forest division of Muzaffargarh is as under (District Gazetteer, 1964).

3.2. Rakh under Forest Department (District Gazetteer, 1964):

S. #.	Name Of Rakh	Area (acre)	Remarks
1	Khair awla	44834	T.D.A.
2	Chaubara	16924	Do
3	Shergarh	38779	Do
4	Nawankot	55539	Do
5	Khpkhar wala	166	Do
6	Thal wali	40850	Do
7	Tiba Mustaqil	13459	Do
8	Thal wali	11363	DC
9	Dabi Shah	974	Do

10	Drig	1868	Do
11	Kut	524	Do
12	Pirhar Sharqi	1656	Do
13	Ahsan Pur	2461	Do
14	Pattal kotadu	1846	Do
15	M.Bukhsh Khokhar	195	Do
16	Ahmad Bari	329	Do
17	Khulang Janobi	1589	Do
18	Manipur	722	Do
19	Jarah Ratheb	367	Do
20	Hassanpur kacha	1368	Do
21	Basti Jarh	888	Do
22	Sarkar No. 23	1399	Do
23	Umer Budh Mela	307	Do
24	Chacha	484	Do
25	Basti Arif	1644	Do
26	Hamze Wali	2307	Do
27	Makhan Bela	936	Do
28	Jal Wala	1010	Do
29	Alipur	1173	Do
30	Chatwanin	640	Do
31	Daira Wadhu	289	Do
32	Sadewahin	640	Do
33	Harpallo	456	Do
34	Jogi wala	848	Do
35	Khan Pur	2358	Do
36	Chak No. 3/4	1601	Do
37	Chak No. 4/4-R	1066	Do
38	Chak No. 5/4-R	760	do
39	Chak No. 6/4-R	760	do

40	Chak No. 7/4-R	1060	do
41	Chak No. 5/4-L	990	do
42	Chak No. 6/4-L	1349	do
43	Chak No. 7/4-L	1040	do
44	Chak No. 2/5-R	60	do
45	Chak No. 3/5-R	77	do
Total		18926 Acres	

Kind of Forest	Total Area
Irrigation Plantation	50081 Acres
Bela Forest	43526 Acres
Canal Side	1250 miles
Roadside	448 Km

(Annual Forest Report, Muzaffargarh)

The ground of most of the forest areas is flat except for occasional depressions, which were due to the old cheek of riverbed; due to the pressure of the population, most of the locals have plugged the natural creeks of both the rivers at these places the natural inundation in Bela Forest has altogether stopped. Nearly the total forest area of district Muzaffargarh is 95000 acres. Many forests are found along banks of the rivers, especially Chenab, Indus and the lower Indus plain the main varieties include Shisham and Babul trees; the Shisham wood is mostly used for furniture, and the bank of Babul is used for tanning purposes, and its wood is as fuel, to increase the production of the forest there were participating many nurseries at Govt. or private level. Eue, Kiker, Shisham, Bakain, Neem, and many fruit plants are available in these nurseries. The government nurseries have nearly 826000 plants and the private nurseries have 941000 plants (Annual Report, Muzaffargarh).

Year	Income	Expenditure
1927	10893	6125
1928	20747	7175
1947	31000	121800
1960	13336638	34665665
1961	15756474	34953102

1962 16545239 33577610

Most of the land in the area of the district is dry. The average rainfall has less than 10 inches, which was insufficient for the growth of forests before the introduction of canal irrigation. Most of the area of the district consists of grassland. Most of the grassland has been brought under cultivation only at a few patches of the land-poor quantity of grass exists where cultivation cannot be carried on for want of water. Muzaffargarh forest division consists of 61925 acres of irrigated plantation and 24577 acres of Bela forests. 2000-kilometer canal side and 352-kilometer roadside plantation (Annual Report, Muzaffargarh). The Govt. has started an action plan to increase the plantation at the schools and colleges levels also. It has started in the 30 main schools and colleges of the district. The plan is to grow 100 plants in every institute. (Interview Mahmood Ahmad Khan DO Forest Muzaffargarh).

S. #	Name of Rakh	Area In Acres	Range
1	Sarwani Bela	1509.96	Muzaffargarh
2	Khudai	2430.11	do
3	Jhalarian	1984	do
4	Kotla sadat	571	do
5	Kanal Sadila	368	do
6	Rakh Khan Pur	51475	do
7	Sohni	696	Ghazi Ghat
8	Ranja	1322	do
9	Dande Wala	916	do
10	Issanwal	7072	do
11	Ghazi Ghat	2706	do
12	Saban Machin	641	do
13	Beet Qasim Shah	1278	do
14	Ahmad Mohana	2370	do
15	Bakaini	1998	do
16	China Malana Bet Mir	4180	do
17	Hzar Khan- 1 Bet Mir	1291	do
18	Hzar Khan- 2	2309	do
19	Bela Wala	840	do
20	Kule Wali	477	do

21	Bet Dewan Sahib	3164	Ali Pur
22	Dambarwal	2612	do
23	Mud Wala	423	do
24	Alipur	318	do
25	Khaira	987	do
26	Ali Wali	4629	do
27	Latti	715	do
28	Giri	1312	do
29	Khan Wah	1695	do
30	Parara	588	do
31	Dhaka	2302	do
32	Sultan Pur	536	do
33	Khanani	720	do
34	Mission Kot	702	do
35	Langarwan	865	do
36	Thal Meg Raj	701	do
37	Kohar Piran	538	do
38	Chandia	168	do
39	Sarki	558	do
40	Kotli Lal	603	do
41	Baqir Shah	1341	do
42	Mohib Shah	628	do
43	Khair Pur Para	1014	do
44	Tiba Nor Gopang	568	do

5. Conclusion:

The discussion mentioned above has tried to explore the nature and role of forests and climate change, in Pakistan with a region called Dera Ghazi Khan. In Pakistan, forests of various types are found, i.e., mountain range forests, Shrub forests, Tidal forests, Bela forests, Artificial Forests, and Rakhs are remarkable. The forests have played a considerable role in atmospheric and climatic change not only but have a vital role in the national economy of the country.

Pakistan, like many other countries, is experiencing the devastating effects of climate change. Poorly planned infrastructure, including irrigation and highways, combined with unchecked urban expansion, have amplified the impact of natural disasters such as earthquakes and floods. The 2005 earthquake and the floods of 2010 and 2011 in Pakistan highlighted the consequences of these factors. The cyclone in 2007 revealed that the Mirani dam barrier, inadequate drainage systems, and unregulated settlements obstructed the natural flow of water. Encroachments in river plains worsened the floods in 2010, and the LBOD has consistently impeded rainwater flow to the Rann of Kutch. The need to revamp infrastructure and disaster management systems is evident, as the effects of climate change intensify. Pakistan's irrigation and drainage networks are ill-equipped to handle abnormal flows caused by climate change. For instance, the LBOD drain, designed for a discharge of 4,000 cusecs, had to bear 18,000 cusecs this year, resulting in breaches and reverse

flows in the interconnected network. The lack of adequate infrastructure and skilled disaster management authorities further complicated the situation, necessitating the evacuation of millions of people to camps. Pakistan's vulnerability to climate change is reflected in its rising position on the Climate Change Vulnerability Index. The frequency of extreme weather events demands urgent and strategic upgrades to infrastructure and administrative systems. As climate change continues to impact communities in Pakistan and across Asia, the coming years are expected to be even more challenging. Last year, Pakistan experienced an unusual shift in monsoon patterns, with rains moving from the easterly to the westerly region. This year, the lower half of Sindh province witnessed record-breaking rainfall, far exceeding normal averages. Districts such as Mirpurkhas, Badin, and Shaheed Benazirabad received exceptionally high amounts of rain, causing significant damage. The flat topography of Sindh, with its limited capacity to absorb rainfall, exacerbated the situation. The damages surpassed those of the previous year, emphasizing the urgent need for effective measures to address the impacts of climate change in Pakistan. In Pakistan, especially in Rural areas, forests are helpful for fuel purposes and used for commercial and domestic requirements in making furniture and wooden work. Forests are necessary to maintain the temperature, and it helps to control the heat during summer as a heat wave or global warming has become a real problem in the world, with concluded this discussion that the growth of forests along with the local growth of local trees will increase the forest and will be beneficial. In Pakistan, there are "effective laws" for forest survival, but with a lack of enforcement, the timber mafia is getting stronger day. By day, banning "permits" to transport forest timber and also legal. Its harvesting should be banned. There is an emergency for forest conservation to increase the forest area. The provincial government of Khyber Pakhtunkhwa has launched a major tree-planting project called Tsunami Billion Trees, through which up to one billion trees will be planted. This will lead to a change in climate; by running an effective campaign, people should be made aware of the "benefits" of forests and create awareness among them about how important it is to stop deforestation.

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